



## DEPARTMENT OF LABOR & ECONOMIC GROWTH DIRECTOR'S OFFICE GENERAL INDUSTRY SAFETY STANDARDS

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R408.10679 of the Michigan Administrative Code is rescinded as follows:

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### PART 6. FIRE EXITS

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#### GENERAL PROVISIONS

##### R 408.10601. Scope.

**Rule 601.** This part specifies requirements for means of egress for employee use required by the advent of hazardous conditions such as fire, explosion, and natural disaster.

##### R 408.10602. Applicability.

**Rule 602.** (1) This part covers new and existing construction. In various sections of this part there are special provisions for existing buildings differing from those for new

construction. Where there are no specific provisions in this part for existing buildings, the requirements for new construction shall apply.

(2) If a political subdivision of the state has fire safety standards in conflict with this part, the more restrictive provisions of either the political subdivision or this standard shall apply.

##### R 408.10603. Definitions; B to F.

**Rule 603.** (1) "Breakaway door" means a door which is designed to slide in normal operation and which will swing open in any position when a maximum pressure of 50

pounds is applied to the latch side of the door in an emergency.

(2) "Draw bolt" means a metal bar or rod in the mechanism of a lock that is thrown or withdrawn by turning the key or retracting a lever.

(3) "Fire area of a building" means that space contained within component structural parts which has a fire resistance sufficient to prevent the further spread of fire which originates therein.

(4) "Fire door" means a fire-resistive door assembly including the frame and hardware.

(5) "Fire resistance" means the property of a material or assembly to withstand fire or give protection from it.

(6) "Flammable" means subject to easy ignition and rapid flaming combustion.

(7) "Floor area" or "gross areas" means the floor area within the perimeter of the outside walls of a building, with no deductions for any of the following:

- (a) Hallways.
- (b) Stairs.
- (c) Closets.
- (d) Thickness of walls.
- (e) Columns.
- (f) Other features.

(8) "Flush bolt" means a door bolt which is designed so that when applied it is flush with the face or edge of the door.

#### **R 408.10604. Definitions; H to M.**

**Rule 604.** (1) "Hasp and staple" means a fastening device that consists of a slotted hinge plate and a loop (staple).

(2) "Hazardous area" means an area of a building, or portion thereof, used for purposes that involve highly combustible, highly flammable, or explosive products or materials which are likely to burn with extreme rapidity or which may produce poisonous fumes or gases, including highly toxic or noxious acids, alkalines, or irritant hazards; which cause the division of material into fine particles or dust subject to explosion or spontaneous combustion; or which constitute a high fire hazard because of the form, character, or volume of the material used.

(3) "Hazard of contents" means the relative danger of the start and spread of fire, the danger of smoke or gases generated, and the danger of explosion or other occurrence potentially endangering the lives and safety of employees in a building. Where certain features of a building are such as to involve a hazard greater than the hazard of the contents, the greater degree of hazard shall govern.

(4) "High hazard contents" means combustibles of a character or quality which burn with extreme rapidity or from which extremely poisonous fumes or explosions are to be expected in the case of fire.

(5) "Horizontal exit" means a way of passage from a building to an area of refuge in another building on approximately the same level or a way of passage through or around a fire-resistant wall or fire-resistant partition to an area of refuge on approximately the same level in the same building which affords safety from fire or smoke in the area of escape and areas communicating therewith.

(6) "Low hazard contents" means combustibles of such low combustibility that self-propagating fire cannot occur and that consequently the only probable danger will be from panic, fumes, smoke, or fire from some external source.

(7) "Means of egress" means a continuous path of travel from any point in a building to the open air outside at ground level and consists of 3 separate and distinct parts: the exit access, the exit, and the exit discharge. A means of

egress comprises both vertical and horizontal means of travel. The 3 separate parts are defined as follows:

- (a) "Exit access" means that portion of a means of egress which leads to an entrance to an exit.
- (b) "Exit" means that portion of a means of egress which is separated from the area of a building from which escape is to be made by a wall, floor, door, or other means which provides the protected path necessary to proceed with reasonable safety to the exterior of the building.
- (c) "Exit discharge" means that portion of a means of egress between termination of the exit and the exterior of the building at ground level.

#### **R 408.10605. Definitions; N to S.**

**Rule 605.** (1) "Noncombustible building" means a building that is constructed of materials which do not support fire.

(2) "Ordinary hazard contents" means combustibles which are liable to burn with moderate rapidity and to give off a considerable volume of smoke, but from which neither extremely poisonous fumes nor explosions are to be expected in case of fire.

(3) "Self-closing" means equipped with an approved device which will insure closing without manual assistance after having been opened.

(4) "Sprinklered" means equipped with an approved automatic sprinkler system which is properly maintained.

(5) "Street" means a public thoroughfare which is 30 or more feet in width, which has been dedicated or deeded to the public for public use, and which is accessible for use by a fire department in fighting fires. An enclosed space or tunnel, even though used for vehicular and pedestrian traffic, is not considered a street.

(6) "Surface bolt" means a locking bolt that is installed on the surface of a door.

#### **R 408.10608. Notification of emergency escape procedures and routes; designation of evacuation assistants.**

**Rule 608.** (1) An employer shall assure that employees are informed of emergency escape procedures and emergency routes to approved means of egress.

(2) An employer shall designate a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

#### **R 408.10611. Design of buildings and structures.**

**Rule 611.** (1) A building or structure designed for human occupancy shall be provided with exits, as prescribed in this part, which permit prompt escape in case of fire or other emergency. Exits and other safeguards shall be designed so that an employee's safety or preservation of life in case of fire or other emergency is not dependent solely on a single safeguard. Additional safeguards shall be provided for life safety in case any single safeguard is ineffective due to human or mechanical failure.

(2) A building or structure shall be constructed, arranged, equipped, maintained, and operated to avoid undue danger to the lives and safety of the employees from fire, smoke, fumes, or panic during the period of time necessary for escape from the building or structure.

(3) If a building or structure is of such size, arrangement, or occupancy that a fire might not itself provide a warning, the building or structure shall be equipped with a fire alarm system in accordance with the provisions of R 408.10981 of general industry safety standard, Part 9. Fixed Fire Equipment, to facilitate a fire drill or to warn of a fire so the employees may escape.

**R 408.10612. Occupancy of new buildings.**

**Rule 612.** A building under construction shall not be occupied in whole or in part until all facilities required by this part, in the portion to be occupied, are installed and functioning.

**R 408.10613. Occupancy and use during repairs and alterations.**

**Rule 613.** (1) An existing building shall not be occupied during repairs or alterations unless exits and fire protection are continuously maintained.

(2) A hazardous substance or equipment for repairs or alterations shall not be introduced in a building while the building is occupied, unless the condition of use and safeguards provided are such as not to create any additional danger to employee's lives.

**R 408.10614. Operating condition of protective equipment.**

**Rule 614.** A required exit, exit lighting, automatic sprinkler system, fire detection and alarm system, fire door, and other required items of fire protection shall be maintained in proper operating condition.

## CLASSES OF OCCUPANCY AND HAZARD OF CONTENTS

**R 408.10621. Classes of occupancy.**

**Rule 621.** A building or part thereof shall be classified as follows:

- (a) A hotel, which includes a building, portion of a building, or group of buildings which is under the same management and in which there are more than 15 sleeping accommodations for hire that are primarily used by transients, whether designated as a hotel, apartment hotel, inn, club, or motel or by any other name.
- (b) Mercantile occupancy, which includes a store, market, and other room or building for the display and sale of merchandise. Examples of this occupancy are as follows:
  - (i) Supermarkets.
  - (ii) Department stores.
  - (iii) Shopping centers.
  - (iv) Drugstores.
  - (v) Auction rooms.
- (c) Business occupancy, which means a place used for the transaction of business, other than that covered under mercantile occupancy, for the keeping of accounts and records and for similar purposes. Examples of this occupancy are as follows:
  - (i) Doctors' and dentists' offices.
  - (ii) City and township halls.
  - (iii) Courthouses.
  - (iv) Libraries.
  - (v) Schools.
- (d) An industrial occupancy, which includes a factory that makes products of all kinds and a property devoted to operations such as processing, assembling, mixing, packaging, finishing or decorating, repairing, and similar operations. Examples of this group are as follows:
  - (i) Laboratories.
  - (ii) Dry cleaning plants.
  - (iii) Power plants.
  - (iv) Pumping stations.
  - (v) Smoke houses.

- (vi) Laundries.
- (vii) Creameries.
- (viii) Gas plants.
- (ix) Refineries.
- (x) Sawmills.

- (e) A storage occupancy, which includes a building that is used primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals. Examples of this group are as follows:
  - (i) Warehouses.
  - (ii) Cold storage operations.
  - (iii) Freight terminals.
  - (iv) Truck and marine terminals.
  - (v) Bulk oil storage.
  - (vi) Parking garages.
  - (vii) Hangars.
  - (viii) Grains elevators.
  - (ix) Barns.
  - (x) Stables.
- (f) Miscellaneous occupancies, which means those buildings covered in the provisions of R 408.10691 to R 408.10697.

**R 408.10622. Multiple and partial occupancies.**

**Rule 622.** (1) If 2 or more classes of occupancy occur in the same building so intermingled that separate safeguards are impractical, the safeguard facilities shall be sufficient to meet the requirements for each individual area or section, as well as for the entire building.

(2) If a minor portion of a building is used for any purpose incidental to the major occupancy and the minor occupancy does not incur any hazard to the remainder of the building, it shall be classified as part of the major occupancy.

**R 408.10623. Employee emergency plans.**

**Rule 623.** (1) This rule applies to all emergency action plans that are required by a particular Michigan Occupational Safety and Health Act safety standard. The emergency action plan shall be in writing and shall specify the designated actions that employers and employees must take to ensure employee safety from fire and other emergencies. Employers that employ less than 10 employees may communicate the plan orally to employees and need not maintain a written plan.

(2) All of the following information, at a minimum, shall be included in an emergency plan:

- (a) Emergency escape procedures and emergency escape route assignments.
- (b) Procedures to be followed by employees who remain to operate critical plant operations before they evacuate.
- (c) Procedures to account for all employees after emergency evacuation has been completed.
- (d) Rescue and medical duties for those employees who are trained to perform them.
- (e) The preferred means of reporting fires and other emergencies.
- (f) The names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.

(3) An employer shall establish an employee alarm system which is in compliance with the provisions of O.H. rule 1910.165, employee alarm systems, and which is available, upon request, from the safety standards division of the Michigan department of consumer and industry services. If the employee alarm system is used for alerting fire brigade members or for other purposes, a distinctive signal for each purpose shall be used.

(4) An employer shall establish, in the emergency action plan, the types of evacuation to be used in emergency circumstances.

(5) Before implementing the emergency action plan, an employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees. The employer shall review the plan, at the following times, with each employee to whom the plan applies:

- (a) When the plan is developed.
- (b) If an employee's responsibilities or designated actions under the plan change.
- (c) If the plan is changed.

An employer shall review, with each employee, upon initial assignment, those parts of the plan that the employee must know to protect the employee in an emergency. The written plan shall be kept at the workplace and made available for employee review.

#### **R 408.10624. Fire prevention Plans.**

**Rule 624.** (1) This rule applies to all fire prevention plans that are required by a particular Michigan occupational safety and health act standard. The fire prevention plan shall be in writing. Employers that employ less than 10 employees may communicate the plan orally to employees and need not maintain a written plan.

(2) All the following information, at a minimum, shall be included in the fire prevention plan.

- (a) All of the following information about major workplace fire hazards:
  - (i) A list of the major workplace fire hazards.
  - (ii) The proper handling and storage procedures for the items listed in paragraph (i) of this subdivision.
  - (iii) The potential ignition source of the items listed in paragraph (i) of this subdivision, such as welding or smoking, and control procedures with respect to the potential sources of ignition.
  - (iv) The type of fire protection equipment or systems that are necessary to control a fire that involves the items specified in paragraph (i) of this subdivision.
- (b) The names or regular job titles of those personnel who are responsible for the maintenance of equipment and systems that are installed to prevent or control fires or the sources of ignition.
- (c) The names or regular job titles of those personnel who are responsible for the control of fuel source hazards.

(3) An employer shall control the accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The control procedures shall be included in the written fire prevention plan.

(4) An employer shall inform employees of the fire hazards of the materials and processes to which they are exposed.

(5) An employer shall review, with each employee, upon initial assignment, those parts of the fire prevention plan that the employee must know to protect the employee in an emergency. The written plan shall be kept in the workplace and made available for employee review.

(6) An employer shall regularly and properly maintain, according to established procedures, equipment and systems that are installed on heat-producing equipment to prevent the accidental ignition of combustible materials. The maintenance procedures shall be included in the written fire prevention plan.

## **MEANS OF EGRESS**

#### **R 408.10631. Construction, maintenance and changes.**

**Rule 631.** (1) The components of a means of egress including doors, stairs, ramps, passages and signs shall be of substantial construction and shall be maintained in an operable condition.

(2) An exit shall be not less than 28 inches wide, except where specifically permitted elsewhere in this part. Ceiling height of a means of egress shall be not less than 7 1/2 feet and a projection from the ceiling not less than 6 2/3 feet from the floor.

(3) A space formed with movable or folding partitions and occupied by more than 20 persons shall have an approved means of egress.

(4) An alteration, addition or change of occupancy that would reduce means of egress below the requirements for a new building is prohibited.

(5) Furnishings and decorations of an explosive or highly flammable character shall not be used in any occupancy.

(6) Where fire retardant paints or solutions are used, they shall be renewed, as necessary, to maintain their fire retardant properties.

#### **R 408.10632. Obstructions.**

**Rule 632.** (1) A means of egress shall be continuously maintained free of all obstructions or impediments to full instant use in case of fire or other emergency. A mirror shall not be placed on an exit door or be placed in or adjacent to an exit in a manner to confuse the direction of exit.

(2) A lock, fastening device or barrier shall not be installed or used on a means of egress in a manner that will prevent or hinder free escape from the inside of a building.

(3) A device or alarm to restrict the improper use of an exit shall be so designed and installed that it cannot, even in case of failure, impede or prevent emergency use of an exit.

(4) Devices such as turnstiles and gates shall not be placed so as to obstruct a means of egress.

(5) No combustible or flammable debris, waste or other material, the burning of which would render hazardous egress from the building shall be placed, stored or kept on, under, at the bottom of, or adjacent to a means of egress or elevator. Where a means of egress is being obstructed by the placement of movable objects, aisles shall be marked and railings or permanent barriers provided to protect the means of egress against encroachment. A railing or standard barrier is as per the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways and Skylights, being R 408.10201 to R 408.10239 of the Michigan Administrative Code.

#### **R 408.10633. Permissible exits and exit components.**

**Rule 633.** (1) Approved exits for all occupancies regulated by this part shall be restricted to the following permissible types: doors, inside or outside stairs, horizontal exits, ramps, escalators and fire escapes for existing occupancies.

(2) An exit shall consist only of approved components. An exit shall be constructed as an integral part of the building or permanently affixed thereto.

(3) Stairs, landings and other exit components shall be guarded against falls over open edges, and guards and handrails shall continue the full length of the guarded exit component.

(4) An exit protected by separation from other parts of the building shall have the separating construction meet the following:

- (a) The separation shall have not less than 1 hour fire resistance rating when the exit connects 3 stories or less. This applies whether the stories connected are above or below the story at which the exit discharge is located.
- (b) The separation shall have not less than a 2 hour fire resistance rating when the exit connects 4 or more stories, whether above or below the floor of discharge.
- (c) Any opening therein shall be protected by an approved self-closing fire door.
- (d) An opening in an exit enclosure shall be confined to that which is necessary for access to the enclosure from a normally occupied space and for egress from the enclosure.

#### **R 408.10634. Number of exits.**

**Rule 634.** (1) Not less than 2 exits, remotely located from each other, shall be provided for every building, floor, or fire area, including a basement. However, a single exit may be permitted when approved in a new and existing low or ordinary hazard occupancy for a building, floor, or fire area with a population of less than 50 persons.

(2) Where the contents of a building are classified as high hazard, there shall be not less than 2 exits which are accessible in different directions. All doors shall swing in the direction of exit travel. Where floor areas are divided into rooms, there shall be not less than 2 ways of escape from every room, however small, except toilet rooms that are not located in areas of high hazard classification.

(3) A single-story, noncombustible building for industrial or storage occupancy which has an approved fully equipped automatic sprinkler system and which is normally not subject to traffic by other than employees shall have exit doors which will provide safe egress and which are spaced not more than every 300 feet apart on the perimeter wall.

#### **R 408.10635. Travel distance to exits.**

**Rule 635.** (1) The total number of exits in a building shall be sufficient so that the maximum travel distance from any occupied space to at least 1 exit shall not exceed the limits specified in rule 636.

(2) The distance to an exit shall be measured along the center line of the natural and unobstructed path of travel.

(3) In case of an open area, the distance to an exit shall be measured from the most remote point subject to occupancy. In case of an individual room subject to occupancy by not more than 6 persons, distance to an exit shall be measured from the doors of such room if the path of travel from any point in the room to the door does not exceed 50 feet.

(4) Where an open stairway is part of a path of travel to a required exit, the distance shall include the travel on the stairway, and the travel from the end of the stairway to reach an outside door or other exit, in addition to the distance to reach the stairway.

(5) Where any part of an outside stair or other outside exit is within 15 feet horizontal distance of an unprotected building opening, the distance to an exit shall include the length of travel, to ground level, on the exit itself.

(6) Exits and exit access shall be so arranged that there are no deadend pockets or hallways whose depths exceed the limits specified for the individual occupancies in table 1.

#### **R 408.10636. Table of exit distances.**

**Rule 636.** (1) An industrial or storage occupancy with an ordinary hazard classification may extend the maximum distance of travel to an exit to 400 feet if the occupancy is in

a single-story, noncombustible building which has an approved, fully automatic sprinkler system which is in compliance with the provisions of R 408.10921 of general industry safety standard, Part 9. Fixed Fire Equipment.

(2) An industrial or storage occupancy with an ordinary hazard classification may extend the maximum distance of travel to an exit to more than 400 feet if the occupancy is in a single-story noncombustible building, has an approved, fully automatic sprinkler system, and heights of the ceiling, smoke curtain and roof ventilation are designated to minimize the possibility that an employee may be overtaken by the spread of fire or smoke within 6 feet of the floor level before he or she can reach an exit.

(3) A building described in subrule (2) of this rule which has a travel distance of more than 400 feet shall have an approved fire alarm system installed in accordance with the provisions of R 408.10981 of general industry safety standard, Part 9. Fixed Fire Equipment, and shall have all of the following equipment:

- (a) A standard approved fire alarm that includes a coded system to a centrally located station, which station shall be supervised during occupancy.
- (b) A manually operated fire alarm sending station at each main exit and in the natural path of escape at an accessible and visible location.
- (c) A fire alarm sending station which is located so that not more than 200 feet will have to be traversed to reach the station.

(4) A mercantile occupancy with an ordinary hazard classification may extend the maximum distance of travel to an exit to 300 feet if the occupancy is in a single-story, noncombustible building with an approved, fully automatic sprinkler system that is in compliance with the provisions of R 408.10921 of general industry safety standard, Part 9. Fixed Fire Equipment. A checkout area or lane not in use shall be equipped with a breakaway device to provide a means of egress in the event of an emergency.

(5) Table 1 reads as follows:

**TABLE 1**

Type of occupancy	Maximum travel distance to exits (in feet)		Dead-end limits (in feet)
	Unsprinklered	Sprinklered	
Mercantile, ordinary hazard	100	150	50
Mercantile, high hazard	75	75	0
Business	200	300	50
Industrial	200	300	50
Industrial, high hazard	75	75	0
Storage, low and ordinary hazard	200	300	50
Storage, high hazard	75	100	0
Hotels	100	200	35

Note: For miscellaneous structures, see R 408.10691 to R 408.10697

#### **R 408.10637. Means of egress capacity.**

**Rule 637.** (1) Where a building is equipped with exits so located as to satisfy travel distance requirements for the occupancy and hazard of contents classification but has an exit deficiency due to its population density, additional exit capacity shall be provided to satisfy the requirements of these rules.

(2) The capacity of a means of egress shall be measured in units of width of 22 inches. Fractions of a unit shall not be counted, except that 12 inches added to 1 or more full units shall be counted as 1/2 a unit of exit width. A

40 inch door may be rated as units for existing construction only.

(3) The capacity of a means of egress shall be limited to the capacity of its lowest rated component. Units of exit width shall be measured in the clear at the narrowest point of the means of egress.

#### **R 408.10638. Capacity of components.**

**Rule 638.** (1) Means of egress components shall have the following rated exiting capacities per unit of width:

- (a) Doors leading outside the building at grade or not more than 21 inches above or below grade... 100 persons per unit.
- (b) Horizontal exits... 100 persons per unit.
- (c) Stairs and ramps... 60 persons per unit.
- (d) Fire escapes with access by doors... 45 persons per unit.
- (e) Fire escapes with access by windows... 20 persons per unit.
- (2) The exiting capacities prescribed in subrule (1)(a) and (b) may be increased to 150 persons per unit, if the occupancy is equipped with an approved fully automatic sprinkler system.

#### **R 408.10639. Capacity as affected by population.**

**Rule 639.** (1) The capacity of a means of egress from a building, floor balcony, tier, or other occupied space shall be sufficient for the population thereof. The population for industrial and storage occupancies shall be based on the maximum number of employees or persons that may be in the space at any time as determined by actual count. All other types of occupancies shall be not less than the number computed in accordance with the provisions of table 2.

(2) Mercantile occupancy in a single-story, noncombustible building with an approved, fully equipped automatic sprinkler system that is in compliance with the provisions of R 408.10921 of general industry safety standard, Part 9. Fixed Fire Equipment, may increase the square footage requirement in table 2 by 100%.

(3) The population of an occupancy shall be limited to the existing exit capacity of a building or space.

(4) Where an exit serves more than 1 floor, only the population of each floor considered individually need be used in computing the capacity of the exit at the level, if the exit capacity is not decreased in the direction of exit travel. Where a means of egress from floors above and below converge at an intermediate level, the capacity of the exit from the point of convergency shall be not less than the combined capacity of the converging exits.

(5) Table 2 reads as follows:

**TABLE 2**

Type of occupancy	Square feet per person
Mercantile, street floor or sales basement	30
Mercantile, other floors	60
Mercantile, office	100
Mercantile, storage	300
Business	100
Hotel	200
Industrial	200

Note: The computed population of an occupancy is obtained by dividing the total floor area of a building, floor, or a fire area by the area within the perimeter of the outside walls of a building, with no deductions for any of the following:

- (a) Hallways.
- (b) Stairs.
- (c) Closets.
- (d) Thickness of walls.

- (e) Columns.
- (f) Other features

#### **R 408.10641. Exit access and discharge.**

**Rule 641.** (1) An exit access shall not be through a room subject to locking.

(2) An exit access shall be so arranged that it will not be necessary to travel through any area of high hazard occupancy in order to reach the nearest exit.

(3) The minimum width of an exit access shall be at least equal to the required width of the exit to which it leads, but not less than 34 inches. The headroom clearance shall be not less than 6 feet 8 inches from the floor.

(4) An exit discharge shall discharge directly to a street, or to a yard, court or other open space of such size as to accommodate all employees leaving the building by that exit discharge to safe access to a street.

(5) Stairs and other exits shall be arranged to make clear the direction of egress to the street. Where an exit stairs continues beyond the floor of discharge, it shall be interrupted at the floor of discharge by a partition, door or other effective means.

(6) Exit access by the way of an exterior balcony, porch, gallery or roof shall:

- (a) Be kept free from accumulations of snow and ice.
- (b) Be a permanent direct route without obstructions, such as railings, gates, barriers or other objects, that might divide the space into sections or rooms. Where furniture or other movable objects might block the path of travel, they shall be secured in place or a standard barrier as prescribed in rule 231 of Part 2, Floor and Wall Openings, Stairways and Skylights, shall protect the path of travel.
- (c) Have no dead-ends in the excess of 20 feet.
- (d) Comply with this part as to requirements for width and arrangement.

## **DOORS AND STAIRS**

#### **R 408.10643. Doors, general provisions.**

**Rule 643.** (1) A door assembly, including the doorway, frame, door and necessary hardware, may be used as a component in a means of egress when it conforms to the requirements of this part. As such, the assembly is designated as an exit door.

(2) A single leaf of an exit door shall be not less than 28 inches nor more than 48 inches in width.

(3) Where a door or gate opens directly on a stairway, a platform shall be provided, and the swing of the door or gate shall not reduce the floor area leading to the stairs to a width less than 20 inches.

(4) A sliding door shall not be used as part of the exit capacity of building unless it is designed and equipped with a break-away type door.

#### **R 408.10644. Swing.**

**Rule 644.** (1) An exit door shall be of the sidehinged swinging type. The force required to fully open any door in the means of egress shall not be more than 50 pounds (222 newton) applied to the latch side of the door. The door shall swing with exit travel when serving an area of high hazard occupancy or a building, floor, or area with a population of more than 50 persons, the construction of which started after the effective date of this part.

(2) If 1 or more approved exits are provided and the travel distance requires additional exits, a mechanically aided sliding door may be used to exit to the outside of a building

constructed before May 15, 1970, under the following conditions:

- (a) The occupancy shall be classified as a low or ordinary storage hazard or an ordinary mercantile hazard.
- (b) The mechanical aid to the door shall allow the door to be opened quickly and easily by 1 person.
- (c) The mechanical aid to the door shall not be rendered inoperative by fire or the lack of maintenance.
- (3) An exit door that gives access to a stairway shall swing in the direction of exit travel, shall not block stairs or landings during its swing, and shall not interfere with the full use of the stairway when open.
- (4) An exit door at the foot of stairs from upper floors or at the head of stairs from basements shall swing with exit travel.
- (5) A screen door or storm door that is part of a required exit shall not swing against the direction of exit travel in any case where doors are required to swing with exit travel.

#### **R 408.10645. Locks, fastening devices, and closing mechanisms.**

**Rule 645.** (1) In every building or structure, at all times the building or structure is occupied, an exit door shall be arranged and maintained so as to be readily opened without the use of a key from the side from which egress is to be made. Mental, penal, or corrective institutions which employ supervisory personnel who are on 24-hour daily duty and which have provided for the effective removal of occupants in case of fire or other emergencies are excepted from this requirement.

(2) A latch or other fastening device on an exit door shall be provided with a knob, handle, panic bar, or other simple type of releasing device. Slide bolts, hasps, hooks and eyes, and similar types of locking devices that are difficult to open against door pressure shall not be installed or used.

(3) A fire door to a stair enclosure or horizontal exit shall be provided with a reliable self-closing mechanism and shall not, at any time, be secured in the open position.

#### **R 408.10646. Power operated doors.**

**Rule 646.** An exit door, wholly or partly power operated, shall be so designed that in case of power failure it can be manually operated. A power operated door shall not be counted as a required exit unless it swings with the exit travel.

#### **R 408.10647. Revolving doors.**

**Rule 647.** (1) A revolving door shall be considered an approved exit door only if all of the following conditions are satisfied:

- (a) The door shall be installed before the prohibition listed in subrule (2) of this rule.
- (b) The number of revolving doors used as exit doors shall not be more than the number of swinging doors used as exit doors within 20 feet thereof.
- (c) A revolving door without an adjacent swinging door may serve as an exit for a street floor elevator lobby if no stairway or door from other parts of the building discharges through the lobby and the lobby has no occupancy other than as a means of travel between elevators and the street.
- (d) A revolving door shall be equipped with means to prevent its rotation at more than 12 1/2 revolutions per minute.

- (e) A revolving door shall not be used at the foot of stairs from upper floors or at the head of stairs from the basement or other lower floors.
- (f) A revolving door credited as an exit door shall have a rated capacity of 1/2 unit of exit width.
- (2) A revolving door that is installed after the effective date of this part shall not be considered an approved exit door.

#### **R 408.10651. Stairs.**

**Rule 651.** (1) Stairs servicing as a required exit shall comply with the requirements of this part as to construction specifications and details, and of table 3.

(2) A variation in the width of tread or height of risers in any flight shall not exceed 3/16 inch.

(3) A stair and a platform or landing used in connection therewith, in a building 4 stories or more in height, shall be of noncombustible construction throughout, except for handrails.

(4) A stair, platform, landing, balcony and stair hallway floor shall be designed to carry a load of 100 pounds per square foot, or a concentrated load of 300 pounds so located as to produce maximum stress conditions.

(5) Where the material of stair treads and landings is such as to involve danger of slipping, nonslip material shall be provided on the tread surface.

(6) Stairways and intermediate landings shall continue with no decrease in width along the direction of exit travel.

(7) Monumental stairs, either inside or outside, may be accepted as required exits if all requirements for exit stairs are complied with, except that curved stairs may be accepted with a radius of 25 feet or more at the inner edges.

**TABLE 3**

Minimum width clear of all obstructions except handrails which may project not more than 3 1/2 inches each side.	44 inches. 36 inches where total occupancy of all floors is served by stairway is less than 50 persons.
Maximum height of risers: Existing construction - New construction -	9 inches. 8 inches
Minimum width of tread exclusive of nosing or projection: Existing construction - New construction -	8 inches. 10 inches.
Winders: Existing construction -  New construction -	Permitted when complying with all other requirements of this part. Not permitted.
Maximum height between landings	12 feet.
Minimum dimension of landing in direction of travel	44 inches

## **HORIZONTAL EXITS, RAMPS AND ESCALATORS**

#### **R 408.10661. Horizontal exits.**

**Rule 661.** (1) A fire area or area of refuge with a horizontal exit shall have in addition to the horizontal exit or exits at least 1 means of egress leading to the outside, or have access to an adjacent fire area containing an outside means of egress.

(2) Where either side of horizontal exit is occupied, the doors used in connection with the horizontal exit shall be unlocked.

(3) The floor area on either side of a horizontal exit shall be sufficient to hold the occupants of both floor areas

allowing not less than 3 square feet clear floor area per person.

(4) Where a horizontal exit serves areas on both sides of a wall there shall be adjacent openings with swinging doors at each, opening in opposite directions, with signs on each side of the wall or partition indicating as the exit door the door which swings with the travel from that side; or other approved arrangements providing doors always swing with any possible exit travel.

#### **R 408.10664. Ramps.**

**Rule 664.** (1) A ramp may be a component in a means of egress when it conforms to the requirements of this part. A ramp which is constructed after the effective date of this part and which is less than the minimum measurements prescribed in this rule shall not be considered as an approved part of a means of egress.

(2) A ramp and the platforms and landings associated therewith shall be designed for not less than 100 pounds per square foot live load.

(3) The slope of a ramp shall not vary between landings. A landing shall be level and the changes in direction of travel, if any, shall be made only at landings.

(4) A ramp in a building that is more than 3 stories in height shall be made of noncombustible construction. A ramp floor and landings shall be solid and without perforations.

(5) A ramp shall have a nonslip surface.

(6) A ramp shall have a minimum width of 44 inches and a maximum slope of 1 inch in 12 inches.

#### **R 408.10667. Escalators.**

**Rule 667.** An escalator, to be considered a component of means of egress, shall be fully enclosed above the ground floor and equipped with fire doors containing fusible links to protect the escalator area against the passage of flame, smoke and gases in the event of fire. An escalator being operated in the direction contrary to normal exit travel shall not be considered a means of egress.

## **FIRE ESCAPES**

#### **R 408.10671. Fire escape stairs.**

**Rule 671.** (1) Fire escape stairs may be used as a required exit only in existing buildings. Fire escape stairs shall not constitute more than 50 percent of the required exit capacity. Fire escape stairs shall not constitute any part of the required exits for a new building.

(2) Fire escape stair dimensions shall be in accordance with table 5.

**TABLE 5**

Minimum Width	22 inches clear between rails
Minimum horizontal dimension of a landing or platform	22 inches
Maximum rise	9 inches
Minimum tread, exclusive of nosing	9 inches
Spiral winders	Not permitted
Maximum height between landings	12 feet

(3) Fire escape stairs shall have walls or approved guards, and handrails on both sides.

#### **R 408.10672. Stair construction and load.**

**Rule 672.** (1) Iron, steel, concrete or other approved noncombustible material shall be used for the construction of

fire escape stairs, balconies, railings and other features appurtenant thereto.

(2) Balconies and stairs shall be designed to carry a load of 100 pounds per square foot, or a concentrated load of 300 pounds so located as to produce maximum stress conditions.

#### **R 408.10673. Exposure to fire escape stairs.**

**Rule 673.** Fire escape stairs shall be so arranged that they will be subject to exposure by the smallest possible number of window and door openings. Every opening, any portion of which is within the following limits, shall be completely protected by approved fire doors or metal frame wired glass windows, as follows:

- A horizontal opening if within 15 feet of a balcony, platform or stairway constituting a part of the escape proper. This does not apply to a platform or walkway leading from the same floor to the escape proper. Protection need not extend around a right angle corner (outside angle 270 degrees) of the building.
- An opening below if within 3 stories or 35 feet of a balcony, platform, walkway, or stairway constituting a part of the escape proper, or within 2 stories or 20 feet of a platform or walkway leading from any story to the escape proper.
- An opening above if within 10 feet of a balcony, platform or walkway, as measured vertically, or from any stair treads, as measured vertically from the face of the outside riser.
- An opening on a top story. Protection for wall openings is not required where stairs do not lead to the roof.

#### **R 408.10674. Access to fire escape stairs.**

**Rule 674.** (1) Access to fire escape stairs shall be by doors or casement windows whose minimum dimensions are 24 inches by 6 feet 6 inches, or by double hung windows 30 by 36 inches clear opening. Double hung windows shall be so counterbalanced and maintained that they can be readily opened.

(2) Insert screens, if any, on any type of opening giving access to fire escape stairs shall be of types that may be readily opened or pushed out. Storm sash shall not be used on a window providing access to fire escape stairs.

(3) Access to fire escape stairs through windows with sills more than 12 inches above the inside floor level shall be provided with permanent access steps leading to the access window. The outside balcony shall not be more than 18 inches below the sill.

#### **R 408.10675. Swinging stairs.**

**Rule 675.** (1) A swinging stair section shall not be used for a fire escape stairs except where termination is over a sidewalk, alley or driveway.

(2) swinging stair section shall not be located over doors, over the path of travel from another exit, nor be in any location where there are obstructions.

(3) The width of a swinging stair section shall be at least equal to that of the stairs above and the pitch shall not be steeper than that of the stairs above.

(4) counterweight shall be provided for a swinging stair section and this shall be of the type balancing about a pivot, no cables being used. Counterbalancing shall be such that a weight of 150 pounds 1 step from pivot will not start, swinging section, and a weight of 150 pounds, 1/4 of the length of the swinging stairs from the pivot, will positively cause the stairs to swing down.



(5) A latch or other device shall not be installed or used to lock a swinging stair section in the up position.

#### **R 408.10677. Ladders.**

**Rule 677.** No form of ladder shall be used as a fire escape except that a ladder conforming to the general industry safety standards commission standard, Part 3. Fixed Ladders, being R 408.10301 and following of the Michigan Administrative Code, may be used to provide a means of escape from a boiler room, storage elevator or tower, as permitted for special miscellaneous occupancies, elevated platforms around machinery or similar spaces subject to routine simultaneous occupancy by not more than 3 persons.

#### **R 408.10679. Rescinded.**

## **ILLUMINATION AND MARKING**

#### **R 408.10681. Artificial lighting.**

**Rule 681.** (1) A means of egress shall be illuminated by artificial lighting at places and for periods of time required to maintain the illumination to values not less than 1.0 foot candles measured at the floor. Illumination shall be so arranged that the failure of any single lighting unit, such as the burning out of an electric bulb, will not leave the area in darkness.

(2) Artificial lighting shall be from a source of reasonable reliability, such as a public utility service. A battery operated electric light or any type of portable lamp or lantern shall not be used for primary exit illumination. Luminescent, fluorescent or reflective material shall not be used as a substitute for required illumination.

#### **R 408.10682. Emergency illumination.**

**Rule 682.** In a building with natural lighting subject to occupancy by more than 300 persons, and in a building for which no natural lighting is provided and subject to occupancy by more than 100 persons, approved emergency lighting facilities shall be provided for a means of egress so arranged that required exit illumination will be maintained for a period of at least 1/2 hour in the event of a failure of normal lighting of the building. Emergency lighting facilities shall be automatic, and there shall be no appreciable period of interruption during the change-over from the normal lighting of the building.

#### **R 408.10685. Signs.**

**Rule 685.** (1) A means of egress to an exit not immediately apparent from any point in an occupancy shall be marked by directional signs.

(2) A door, passage or stairway, which is neither an exit nor an exit access, and which is so located or arranged as to be likely mistaken for an exit shall be identified by a sign reading "NOT AN EXIT" or similar designation, or be identified by a sign indicating its actual use or character.

(3) A sign shall designate an exit and shall be located and be of such size and color and design as to be readily visible and identifiable from the distance of travel for that particular occupancy.

#### **R 408.10686. Sign illumination and letter size.**

**Rule 686.** (1) An exit sign shall be illuminated by a light source giving the value of not less than 5.0 foot candles on the illuminated surface.

(2) An exit sign shall have the word "EXIT" in plainly legible letters not less than 6 inches high, with the principal strokes of the letters not less than 3/4 inch wide.

(3) An internally illuminated exit sign shall be provided where the reduction of normal illumination is permitted and less than 5 foot candles would appear on the exit sign.

## **MISCELLANEOUS OCCUPANCIES**

#### **R 408.10691. Vehicles.**

**Rule 691.** A house trailer or similar vehicle, railroad car, street car, truck or bus from which the wheels have been removed and a permanent type foundation provided, or otherwise fixed so that it is no longer mobile is considered a building and is subject to the requirements of this part.

#### **R 408.10692. Vessels.**

**Rule 692.** A ship, barge or other vessel permanently moored or aground and occupied for purposes other than navigation is subject to the requirements of this part.

#### **R 408.10693. Open buildings.**

**Rule 693.** An open building includes all operations conducted in the open air where equipment is in the open with platforms used for necessary access, sometimes with roofs or canopies to provide shelter, but without walls as distinguished from an enclosed building. An open building shall have exit facilities providing at least 1 means of escape from any point subject to employee occupancy, such means of escape affording safety from fire or smoke therefrom, explosion or release of fumes.

#### **R 408.10694. Aircraft hangars.**

**Rule 694.** (1) An exit from an aircraft storage or servicing area shall be provided at intervals of not more than 150 feet on all exterior walls of the aircraft hangar. A minimum of 2 exits shall serve each aircraft storage or servicing area. Horizontal exits through interior walls shall be provided at intervals of not more than 100 feet. Dwarf or "smash" doors in doors accommodating aircraft may be used to comply with these requirements.

(2) An exit from a mezzanine floor in an aircraft storage or servicing area shall be so arranged that the maximum travel to reach the nearest exit from any point on the mezzanine shall not exceed 75 feet.

#### **R 408.10695. Storage elevators for combustible commodities.**

**Rule 695.** (1) In a storage elevator for combustible commodities there shall be at least 1 stairway from the basement to the first floor and from the first floor to the top floor of the working house which is enclosed in a dust-tight, noncombustible shaft.

(2) A noncombustible door of the self-closing type shall be provided at each floor landing.

(3) An exterior stair or basket ladder-type fire escape, as prescribed in the provisions of general industry safety standard, Part 3. Fixed Ladders, being R 408.10301 et seq. of the Michigan Administrative Code, shall be provided from the roof of the working house to ground level or to the roof of an adjoining annex with access from all floors above the first.

(4) An exterior stair or basket ladder-type fire escape, as prescribed in the provisions of general industry safety standard, Part 3. Fixed Ladders, being R 408.10301 et seq. of the Michigan Administrative Code, shall be provided from the roof of each storage annex to ground level.

(5) A fire escape ladder shall be provided adjacent to a manlift for the up and down sides.

(6) A storage elevator shall have an opening that leads to a fire escape ladder from each floor or work level.

(7) Storage elevators for combustible commodities that exist before April 30, 1974, do not need to comply with the provisions of subrules (1) and (2) of this rule.

**R 408.10696. Towers.**

**Rule 696.** (1) A tower occupied for purposes such as observation or signaling, either an independent structure or on top of a building, shall be permitted with a single stairway or ramp exit if all the following conditions are met:

- (a) The tower is of such size as not to be subject to occupancy by more than 25 persons on any 1 floor level.
- (b) The tower is subject only to occupancy by persons capable of descending the stairway and is not used for living or sleeping purposes.
- (c) The construction is fire resistive, noncombustible or heavy timber, with no quick burning interior finish. There shall be no combustible materials in, under or in the immediate vicinity of the tower except as necessary to perform the requirements of occupancy.

(2) Stairs shall conform to the requirements of this part, except that for existing towers fire escape type stairs may be used. (See general industry safety standards commission standard, Part 3. Fixed Ladders, being R 408.10301 and following of the Michigan Administrative Code.)

(3) A tower such as a forest fire observation tower and a railroad signal tower designed for occupancy by not more than 3 persons employed therein need not be constructed of fire resistive, noncombustible material and may be served by ladders instead of stairs. (See general industry safety standards commission standard, Part 3. Fixed Ladders, being R 408.10301 and following of the Michigan Administrative Code.)

**R 408.10697. Piers and water-surrounded-buildings.**

**Rule 697.** (1) A pier used for any purpose other than for mooring of vessels and handling of cargo shall be provided with a means of egress from any building thereon to the pier and from the pier to the mainland appropriate to the character of the occupancy of the pier.

(2) A building, such as a lighthouse, surrounded by water shall have sufficient area of ground, as on an island or fire resistive platform, to provide an adequate area of refuge from a fire in the building.

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